ETV update

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Winter 2002

Introducing ETV Update

By Gordon Bellen,
Vice President,
Research

WELCOME TO the first edition of *ETV Update*, an email publication of NSF International. *ETV Update* is a quarterly newsletter to all stakeholders participating in the three water-related technology areas NSF cooperatively manages for the Environmental Protection Agency (EPA):

- Drinking Water Systems (DWS)
- Source Water Protection (SWP)
- Wet Weather Flows (WWF).

Although each of you is probably only involved in one of the technology areas, I believe many of the topics will be of interest to you. You will receive this and future editions of *ETV Update* in electronic format. There are now more than 2,000 stakeholders involved with NSF in the ETV projects and using an electronic format will help keep costs low.

We have also found that mailing addresses change more often than e-mail addresses. You recently received a mailing asking for an update of your contact information in anticipation of this first newsletter. Please share this newsletter with your colleagues and encourage them to join the NSF ETV stakeholder community.

ETV Update will cover a number of topics: information about individual stakeholders, program status, upcoming meetings, as well as features on verified technology, regulatory updates, field test organizations and their expertise and field test sites. If you have other topics you would like us to discuss, let us know.

In this issue, we introduce the new Director of the EPA ETV Program, Teresa Harten, and the Project Officer for the DWS Center, Jeff Adams. We provide updates on the progress of the SWP, DWS Center and WWF Pilots, including coordination of protocols and test sites for ultraviolet (UV) testing. We discuss the SWP Pilot activities with the U.S. Coast Guard on verification of ballast water treatment technology. You'll also find out about updates to the NSF ETV Web site.

It is an exciting time for ETV. The ETV report to Congress shows 120 verifications and 50 generic test protocols developed by 18 stakeholder groups across 12 technology pilots. Nine of the original pilots have been selected to continue. NSF cooperatively manages 3 pilots as well as 5 of 18 stakeholder groups. In 2001,

the NSF ETV Program was selected to participate in two U.S. Agency for International Development-sponsored technology transfer programs in Thailand and India. EPA Administrator Christine Todd Whitman recently traveled to India, where industry and government officials asked for continued cooperation with ETV.

NSF recently submitted a proposal to the EPA to combine the SWP and WWF Pilots to form the Water Quality Protection Center. This consolidation will enhance the ability to manage this diverse group of technologies in the future.

The DWS Pilot became a Center over a year ago. The proposed EPA budget for next year includes areas like arsenic reduction in drinking water, national environmental technology competition, watershed protection, bioterrorism and infrastructure rehabilitation. The ETV Program has been mentioned and may become involved in all these areas.

NSF sincerely hopes that 2002 will be a prosperous and healthy year for all its stakeholders. We appreciate your participation.

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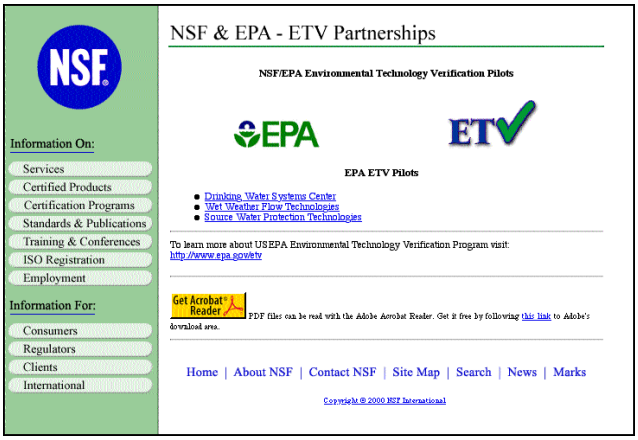
To submit information for publication, contact the NSF ETV Program at 1-800-NSF-MARK.

NSF, a not-for-profit, non-governmental organization, is the leading global supplier of risk-management services in public health and safety. NSF services include product certification and safety audits for the food and water industries. Other services include management systems registrations delivered through NSF-ISR and education through the NSF Center for Public Health Education. NSF is a World Health Organization Collaborating Centre for Food Safety and Drinking Water Safety and Treatment. Serving companies in more than 83 countries, NSF was founded in 1944 and is headquartered in Ann Arbor, Mich.

DWSC Web Site Enhancements

By Angela M. Smith
Project Coordinator
NSF ETV Program



The ETV site, www.nsf.org/etv, includes information about the Drinking Water Systems (DWS) Center and the two NSF ETV pilot programs.

TO PROVIDE the highest-quality health and safety information available, NSF has added a number of new Web pages and other enhancements to **www.nsf.org** .The Environmental Technology Verification (ETV) area of the Web site is no exception. NSF made many enhancements to the ETV site, accessible at **www.nsf.org/etv.** This site includes information about the Drinking Water Systems (DWS) Center, as well as information about the two NSF ETV pilot programs, the Source Water Protection Pilot and the Wet Weather Flows Pilot.

Easy Navigation

Most of the enhancements to the site relate to the DWS Center. When the Water Quality Protection Center is formed, this area of the Web site will be updated. On the main DWS Center page at **www.nsf.org/etv/dws,** we've divided the links into two categories for ease of navigation. The links on the right side of the page correspond to the DWS Center, and those on the left relate to other NSF programs and information. The DWS Center links include announcements and updates; information for vendors, field-testing organizations and laboratories; verification reports and statements; and protocols and test plans. This list of topics appears on every page of the DWS Center Web site, acting as a guide for easy navigation through the site. When users place their cursors over these main topics, sub-topics appear, such as "calendar of events" and "news" under Announcements and Updates.

Valuable Information

The DWS Center Web site contains information that can be downloaded and printed at no cost. All of the DWS Center protocols and test plans are posted on the site, as well as all of the final verification reports and statements. The verification reports are now listed by four different categories that help users find them very quickly. The categories are: contaminant of concern, NSF report number, type of technology and vendor. All appendices to the reports can be obtained by contacting a DWS Center staff member.

Direct Links to NSF Program Information

The topic list on the left side of the main page includes links to NSF programs such as certification, training and conferences, toxicology services and many others. By clicking on the "Clients" button, users can access a new feature on the Web site, NSF Online. NSF Online provides certification clients with free round-the-clock access to account information, product testing details, listing and other information in an easy-to-use, password-protected format.

For More Information

For more information, visit **www.epa.gov/etv** under "related links" on the DWS Center Web site. If you have any trouble finding or navigating the ETV DWS Center Web site, please contact Angela M. Smith at **asmith@nsf.org** or 1-800-NSF-MARK.

Drinking Water Systems Center Status Report

By Bruce Bartley, Manager, Drinking Water Systems Center

ON OCTOBER 1, 2000, NSF International entered into an agreement with the EPA to form an ETV Center dedicated to providing independent performance evaluations of drinking water technologies. The goal of the Center was to raise awareness of new treatment technologies.

The Drinking Water Systems Center represents the next phase of the ETV Program's Drinking Water Systems Pilot, which began in 1995 as a partnership between NSF and the EPA's Office of Ground Water and Drinking Water (OGWDW).

Tests and Reports

The 24 tests and reports completed to date are posted on the EPA and NSF Web sites: **http://www.epa.gov/etv/verifrpt.htm#water** and **http://www.nsf.org/etv/dws/pdf/List_12-5-01.pdf).** These technology types have been evaluated:

- Ultraviolet (UV) radiation systems
- Microfiltration membranes
- Ultrafiltration membranes
- A nanofiltration system
- On-site hypochlorite generation
- Bag and cartridge filters
- Precoat (diatomaceous earth) filters
- Backwashable depth filtration (with and without coagulation)
- Reverse osmosis membranes
- Ozone disinfection.

Testing of additional membrane systems and arsenic removal systems, such as adsorptive media, is anticipated in the near future.

The Center has 9 contaminant-specific verification protocols and 24 technology-specific test plans (TSTP) that outline testing procedures. The contaminant-specific protocols include testing procedures for technologies that:

- Inactivate or remove microbiological contaminants
- Reduce arsenic
- Reduce nitrates
- Reduce precursors to disinfection by-products
- Reduce organics
- Reduce inorganics
- Reduce radionuclides.

The Center plans to complete two TSTPs in the upcoming quarter: the EPA/NSF ETV Equipment Verification Testing Plan for Removal of Synthetic Organic Chemicals (SOCs) by Adsorptive Media and the EPA/NSF ETV Equipment Verification Testing Plan for Removal of Volatile Organic Chemicals (VOCs) by Adsorptive Media.

Recently, the ETV DWS Center held three conference calls with the EPA OGWDW on harmonizing the filtration TSTPs (membrane and bag/cartridge) with those under development by the EPA's OGWDW. Several stakeholders provided comments. Summaries of these conference calls can be found on the aforementioned Web sites. The Center expects that the OGWDW, which is making progress on guidance for filtration, will soon share it with the ETV stakeholders when it is in a form suitable for review. There is a pre-proposal draft of the new rule on EPA's Web site: **http://www.epa.gov/ safewater/lt2/lt2_preamble.pdf.**

Improvements

Many changes were also implemented in the Center from the lessons learned during its pilot period. One of the key changes included enhancing the quality of testing through systematic improvements in the field-testing organizations (FTOs) system. These changes have resulted in three fully qualified FTOs and six conditionally qualified FTOs. For an updated status of an FTO, please see the NSF DWS Center Web site.

The DWS Center's steering committee held a telephone conference call to discuss current issues and provide a status of the Center's activities. One key result was the affirmation of these priorities for the Center's future work:

1. Highest priority will be for small system arsenic reduction technologies.
2. Priority for harmonization of the ETV UV and Filtration Protocols with LT2 Surface Water Treatment Rule.
3. An increase in electronic communication.
4. More cost sharing.

Summaries of recent telephone conferences and other meetings are posted on the Center's Web site at **http://www.nsf.org/etv/dws/dws_meetings.html.**

Reverse osmosis arsenic drinking water treatment system, Park City, Utah

Source Water Protection Status Report

By Tom Stevens, Manager, Source Water Protection Pilot

THE ETV SOURCE WATER Protection (SWP) Pilot is active in a broad array of technology areas, grouped under three main Stakeholder Advisory Groups:

- Decentralized Wastewater Treatment
- Infrastructure and Watershed Protection
- Ballast Water Treatment.

Decentralized Wastewater Treatment

Five residential wastewater treatment technologies for nutrient reduction are currently being verified as part of a yearlong test at two test facilities in Massachusetts and British Columbia. Testing for three of the five nutrient reduction technologies will be completed in March 2002; the other two evaluations are scheduled to end in summer/fall.

Another yearlong test of a wastewater treatment technology will take place according to the Protocol for the Verification of Wastewater Treatment Technologies in Spring 2002 at a residential subdivision in Idaho. The SWP Pilot is working with other vendors of wastewater treatment technologies to secure their participation in the verification process.

Protocol development for disinfection technologies for small treatment applications has been suspended at this time, but may be reinitiated if vendor interest increases.

Infrastructure and Watershed Protection

Generic test plans are under development for several infrastructure rehabilitation technology areas. Draft plans have been completed and are under review for grout materials, pipe liner materials and pipe bursting technologies, while a test plan for coatings is still in development. The grout and liner materials test plans should be completed this spring, and the pipe bursting protocol in the summer.

A protocol for UV disinfection of secondary wastewater effluent and wastewater reuse applications has been submitted to EPA for approval. The protocol encompasses elements of the NWRI/AwwaRF protocol "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" and will provide verification opportunities for the broad spectrum of wastewater treatment applications available to the UV industry. There is considerable vendor interest in verification under the protocol. Testing will begin late this winter.

Testing was completed in November 2001 for a mercury amalgam removal technology, and the final report will be done soon. This technology is installed at dental offices to remove both particulate and soluble mercury. The final verification report and statement should be available to the public later this spring. There is increasing interest in this technology, given the persistent nature of mercury in the environment, mercury toxicity, and the large number of dental offices that are discharging mercury amalgam waste.

A generic test plan for solids separation technologies for flushed swine waste has been submitted for USEPA approval. Testing under this test plan will take place at North Carolina State University, through its Animal and Poultry Waste Management Center. The first testing will begin this spring.

An in-drain treatment technology will be verified under the Protocol for the Verification of In-Drain Treatment Technologies. In-drain treatment technologies are inserts placed in floor or area drains to remove contaminants, solids, hydrocarbons and metals entering the drain. Applications include machine repair, auto body shops and other operations where floor areas are washed down to a drain. The technologies are similar to wet weather flow, source area treatment technologies, except that they address controlled flows to the device, not the uncontrolled flows seen during storm events. As a result, some vendors may opt to have their technologies verified under both the SWP Pilot and the Wet-Weather Flow Technologies Pilot.

Ballast Water Treatment Technologies

Ballast water treatment, the most recent technology area to be addressed by the SWP, addresses the issue of aquatic nuisance species entering U.S. waters in ship ballast water tanks. A Memorandum of Agreement between EPA/ETV and the U.S. Coast Guard (USCG) was signed in June 2001.

The agreement spells out the cooperative efforts between ETV and the USCG to develop a protocol for verification of the performance of ballast water treatment technologies. A technology panel is now developing the protocol, which should be completed by year-end.

Wet Weather Flow Status Report

By John Schenk,
Manager, Wet Weather
Flow Pilot

THE WET WEATHER Flow Pilot (WWF) has completed seven generic protocols:

- Stormwater Treatment Devices
- Induction Mixers for Chemical Disinfection
- High-Rate Ultraviolet Disinfection
- Chemically Enhanced High-Rate Separation
- Vortex-Type High-Rate Separation
- Flowmeters for Applications in Small- and Medium-Sized Sewers
- Wet Weather Flow Models

As of the first of the year, the WWF Program has applications for 25 different technologies and/or models for verification under one of these protocols.

Testing has been completed on four units: two induction mixers and two flowmeters. The verification reports for the mixers are in the final review stage at the EPA and will soon be ready for final signoff and release. Draft reports for the two flowmeters tested are currently under review by NSF staff and will likely be submitted to the EPA for review, with a final release in March.

The UV program has two applicants, with a third vendor considering application. Considerable up-front time and effort was expended to find a suitable testing location that would enable the UV disinfection program under the SWP Pilot to be performed at the same location. This has allowed vendors to select from a broad range of verification categories. The Parsippany-Troy Hills Wastewater Treatment Plant was selected as the test site, and testing under this program for the WWF pilot began in January. Testing of the first two units should be completed this summer.

Two vendors have applied for verification under the high-rate separation without chemical enhancement protocol, one of which is currently being tested in Louisville, KY. Testing should be completed on this unit by early spring, with the verification report completed and reviewed by the end of summer. The Field Testing Organization (FTO) for the second unit in this category has been selected, and the location for field testing is currently being finalized. Initiation of testing for the two units with applications under the chemically enhanced high-rate separation protocol were delayed due to changes of key personnel for the FTO and subsequent difficulties with locating a suitable test site. These problems have finally been overcome, and testing is expected to begin this spring.

One vendor with a runoff model has applied for verification and a second vendor has committed to applying as well. The FTO has completed the work plan for the first model to be verified and has commenced testing. Final results are expected by early summer.

Laboratory testing of flowmeters at Utah State University

The area experiencing the greatest interest is that of stormwater treatment. Twelve companies have submitted applications for a total of 15 different units. Testing for the first unit has been under way in Green Bay, WI, since last fall. Five units are currently being installed in Griffin, GA, and three additional units are undergoing installation in St. Clair Shores, MI. Testing of all of these units will start this spring. Testing locations and FTOs are being determined for the remaining units.

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EPA Names New ETV Program Director

TERESA HARTEN was named the new Director of the ETV Program by E. Timothy Oppelt, Director of EPA's Office of Research and Development's (ORD) National Risk Management Research Laboratory (NRMRL).

Ms. Harten brings outstanding talent and experience to this important position. She previously served as Chief of the Clean Processes Branch in NRMRL's Sustainable Technology Division. Her work has included research and permitting experience related to wastewater technology, drinking water treatment and pollution prevention.

Before coming to the EPA, Ms. Harten worked for the State of Ohio EPA and the City of Cincinnati in environmental permitting, enforcement and research. This experience, as well as her work with EPA Program Offices and the metal finishing industry through EPA's Common Sense Initiative, will be invaluable. It will help in interactions with ETV stakeholders, in preserving the superb EPA ETV team that has evolved to date and in continuing the high level of success of the ETV Program.

The selection of Ms. Harten as Director was prompted by the retirement of previous director

Ms. Penelope Hansen. Ms. Hansen, who had been Director of the ETV Program since its inception, retired September 1, 2002, after a distinguished 30-year career with the EPA. After serving in various positions in a number of EPA offices, Ms. Hansen came to ORD in 1994 to become the Director of the Technology Coordination Staff, the ORD group charged with implementing the newly created Environmental Technology initiative. Under Ms. Hansen's leadership, this group spearheaded the design and implementation of the ETV Program.

"The ETV Program has been blessed with two fine leaders," said Gordon Bellen, NSF Vice President for Research. "Penny came with a background in technology and brought a vision, energy and commitment to ETV that has been essential to its success. Teresa comes to ETV as it begins to mature. Her broad range of experience – from research to enforcement and industry initiatives to program office work – will benefit a program that must respond to regulatory and market needs simultaneously. It has been a pleasure to watch Teresa and Penny work together the last few months before Penny's retirement. Their shared commitment to this program was evident."

Harten's work encompasses wastewater technology, drinking water treatment and pollution prevention.

While previously directed from NRMRL's Washington, D.C., office, the ETV Program is now operated out of NRMRL's main office in Cincinnati, where Harten is located.

** Portions of this article were substantially excerpted for the EPA's ETV Program Quarterly Report, October 2001.*

ETV Upcoming Events

Come see us at these upcoming conferences:

March 17–22:
PITTCON 2002 Conference
New Orleans, LA

March 20:
Decentralized Wastewater Treatment
Newport, RI

March 25–28:
28th Environmental and Energy Symposium
Charleston, SC

May 7–9:
14th Annual EnviroExpo Conference, Boston, MA

May 20–23:
Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds
Monterey, CA

May 20–23:
WastExpo 2002 Conference
Las Vegas, NV

June 5:
Infrastructure Rehabilitation
Pittsburgh, PA

June 18:
Ballast Water Treatment
Alexandria, VA

September 12:
Watershed Protection Technologies
Orlando, FL

Meet Jeffrey Quinn Adams, EPA Project Officer

JEFFREY QUINN ADAMS is the U.S. EPA Project Officer for the NSF Drinking Water Systems Center. He manages cost and performance evaluations of water treatment technologies, including granular activated carbon (GAC), microfiltration, ultrafiltration, nanofiltration, reverse osmosis, ozone, air stripping, and conventional chemical and filtration processes for EPA ORD.

An EPA employee for more than 20 years, Mr. Adams received the EPA Bronze Medal for Commendable Service for his efforts under the ETV Program. He is also a co-recipient of former Vice President Gore's National Performance Review Hammer Award, presented to teams of federal employees who have made significant contributions in support of reinventing government principles.

In addition to his work with the EPA, Mr. Adams has established himself as an expert in water treatment technology evaluation through product development, article writing and affiliation with national associations. He has helped developed computer-based software packages for cost estimation and modeling of GAC, air stripping and membrane-separation drinking water processes. He has also authored several peer-reviewed journal articles and book chapters, including "Cost Estimates for GAC Treatment Systems," for which he received the 1990 American Water Works Association (AWWA) Award. He has served on several AWWA technical committees and AWWA Research Foundation Project Advisory Committees on GAC and membrane processes projects.

"The Drinking Water Systems Pilot was one of the first in the ETV Program," said Bruce Bartley, Manager of the DWS Pilot and Center. "As such, we often were establishing procedures and policies for ETVs to come. Jeff's experience and knowledge of water treatment technology and the workings of the EPA were instrumental in our success."

Mr. Adams received his master of science and bachelor of science degrees in civil/environmental engineering from the University of Cincinnati. Married with two children, he enjoys coaching sports, singing, and building and repairing computers.

NSF Offers Environmental Management Systems Registrations

IN ADDITION to working with the EPA to evaluate the performance of water technologies, NSF also works with organizations to register their environmental management systems (EMS) to International Organization for Standardization (ISO) 14001, the recognized international standard for managing effects on the environment. NSF conducts these registrations through NSF International Strategic Registrations (NSF-ISR), its wholly-owned subsidiary.

NSF-ISR has been involved in EMS for more than 35 years, starting with research projects funded by the U.S. Public Health Service in 1965. NSF-ISR later published the first American EMS standard and represented the United States on the technical subcommittee of ISO that developed the internationally accepted EMS standard, ISO 14001. NSF also conducted several EMS implementation studies for the EPA. NSF-ISR has been issuing ISO 14001 registration certificates to organizations in a broad range of industries since the standard was developed.

For more information about EMS registrations or other management systems registrations such as ISO 9001:2000, AS9100, QS-9000, ISO/TS 16949 or TE Supplement, contact NSF-ISR at 888-NSF-9000 or visit www.nsf-isr.org.

Completed Verifications

Congratulations to the following companies that recently received verifications through the ETV Drinking Water Systems Center:

Aquasource N.A.
Model A-35 Ultrafiltration System

Calgon Carbon Corp.
Sentinel™ Ultraviolet Reactor

ClorTec, a division of Capital Controls Inc.
ClorTec Model MC 100 On-Site Sodium Hypochlorite Generation System

Exceltec International Corp., a subsidiary of Severn Trent Services Inc.
ClorTec Model T-12 On-Site Hypochlorite Generation System

The F.B. Leopold Co.
Ultrabar Ultrafiltration System Utilizing a Mark III Membrane Element

Hydranautics
ESPA2-4040 Reverse Osmosis Membrane Element Module

HYDRACap™ Ultrafiltration Membrane System

Ionics
UF-1-7T Ultrafiltration Membrane System

Kinectico Inc.
CPS100CPT Coagulation and Filtration System

Macrolite® Coagulation and Filtration System, Model CPS 100CPT

SW224 Backwashable Macrolite® Pressure Filtration System

Koch Membrane Systems
TFC®-ULP4 Reverse Osmosis Membrane Module

Lapoint Industries
Aqua-Rite Potable Water Filtration System

Osmonics Inc.
Model PS 150 Ozone Disinfection System

OXI Co. Inc.
OXI-2B

Pall Corp.
WPM-1 Microfiltration System

PCI Membrane Systems
Fyne Process Model ROP 1434 with AFC Nanofiltration Membranes

PentaPure Inc.
PentaPure H-3000-I

Rosedale Products Inc.
Bag and Cartridge Filter System Model GFS-302P2-150S-ESBB

Watermark Technologies, LLC
eVOX® Model 5 Coagulation/Filtration System

Zenon
Enhanced Coagulation ZeeWeed® ZW-500 Ultrafiltration System

Companies Under Test

These companies currently have technologies and/or products under test by NSF in the areas listed below:

Ab Tech Industries
Stormwater Treatment

ADS Corporation
Flow Meters

Atlantic Corporation
UV Disinfection

Aquashield, Inc.
Stormwater Treatment

AWT Environmental
Residential Nutrient Reduction

Baysaver Separation Systems
Stormwater Treatment

BioMicrobics, Inc.
Residential Nutrient Reduction

CDS Technologies, Inc.
Stormwater Treatment/High-Rate Physical Separation

Dental Recycling North America, Inc.
Mercury Amalgam Separator

Drain Works, Inc.
Stormwater Treatment

F.R. Mahony & Associates, Inc.
Residential Nutrient Reduction

H.I.L. Technologies, Inc.
Stormwater Treatment

HydroCompliance Management, Inc.
Stormwater Treatment/In-Drain Treatment

KrisStar Enterprises, Inc.
Stormwater Treatment

Mastrrr Company
Induction Mixers

ONDEO Degremont, Inc.
UV Disinfection for Secondary Effluent and Water Reuse/Chemically-Enhanced High-Rate Separation

Pall Corporation
Microfiltration

PBM of Georgia, Inc.
Stormwater Treatment

Separmatic Filter
Diatomaceous Earth Filter (2)

SeptiTech, Inc.
Residential Nutrient Reduction

Stormwater Management, Inc.
Stormwater Treatment

Suntec Environmental
UV Disinfection for Secondary Effluent and Water Reuse

Trojan Technologies
UV Disinfection

US Filter/Kruger Products
Chemically-Enhanced High-Rate Separation

US Filter/Stranco
Induction Mixers

UV Systems Technology, Inc.
UV Disinfection

Vortechnics, Inc.
Stormwater Treatment

Waterloo Biofilter Systems, Inc.
Nutrient Reduction

WEDECO-Ideal Horizons, Inc.
UV Disinfection

XP-Software
Runoff Models

Zeta Technology, Inc.
Stormwater Treatment